

REMARKS

Claims 1-6, 11-15, 18, 22-27, and 29-52 are presently pending, and Claims 34-43 are withdrawn from consideration due to the Restriction/Election Requirement. Claims 50-52 have been cancelled herein.

Rejection under 35 U.S.C. § 102

The Examiner rejected Claims 1-2, 5, 11-13, 18, and 24-26 under 35 U.S.C. § 102(b) as being anticipated by Nilsen *et al.* (U.S. Patent 5,657,162). The Examiner looks to the embodiment of Figure 5 of Nilsen *et al.* to show two layers of retroreflective prisms.

Independent Claim 1 recites a plurality of first open-faced cube-corner surfaces disposed on a first side of a carrier substrate and a plurality of second open-faced cube-corner surfaces disposed on a second side of the carrier substrate. Independent Claim 25 recites a first plurality of three-sided indentations which form first open-faced cube-corners and a second plurality of three-sided indentations which form second open-faced cube-corners that oppose the first open-faced cube-corners. An exemplary embodiment is illustrated in Figure 14 and described on page 13, lines 11-15 of the present application.

It is particularly noted that the prisms recited by independent Claims 1 and 25 are open-faced cube-corner surfaces. As set forth on page 6, line 29 through page 7, line 6 of the present application, the three open-faced surfaces 18 are disposed at substantially 90° to one another. The incoming light rays R reflect off of the three surfaces 18 such that the outgoing light R is substantially parallel to the incoming light ray regardless of the entrance angle. Thus, the light ray R does not pass through the material that forms the open-faced cube-corner surfaces.

As set forth on page 9, lines 19-23 of the present application, a primary advantage of the open-faced sheeting "is that it can be formed from materials which can have superior properties in areas, such as heat resistance, non-flammability, dimensional stability, environmental

durability, chemical resistance etc., without the requirement that the material be transparent as in the traditional construction." As further set forth at page 9, lines 23-25, another advantage to this construction is that "when the open-faced structure is formed of environmentally fragile polymers, the metal face coating can serve to protect them from destruction by ultraviolet light, moisture, oxygen, etc."

In contrast, the retroreflective prisms disclosed in Nilsen *et al.* are traditional cube-corner prisms. That is, the incoming light rays R pass through the material that forms the cube-corner prisms. Thus, the prisms must be formed from a material that is substantially transparent to allow the light rays to pass therethrough.

Therefore, the rejection with respect to Nilsen *et al.* is respectfully traversed.

The Examiner rejected Claims 44, 46, and 48 under 35 U.S.C. § 102(e) as being anticipated by Fellows *et al.* (U.S. Patent 6,050,691).

Independent Claim 44 recites "[r]etroreflective chips comprising open-faced cube-corner surfaces having an optical coating thereon." Thus, the retroreflective chips are "open-faced" as described above. The cube-corner prisms in Fellows *et al.* are traditional cube-corner prisms and are not open-faced cube-corner surfaces. That is, the cube-corner prisms in Fellows *et al.* must be formed from a substantially transparent material such that the incoming light ray can pass through cube-corner elements and be reflected by the three orthogonal surfaces.

Dependent Claims 46 and 48 depend directly from independent Claim 44 and thus include this patentable distinction. Accordingly, the rejection with respect to Fellows *et al.* is respectfully traversed.

The Examiner rejected Claims 50-52 under 35 U.S.C. § 102(b) as being anticipated by Jones (U.S. Patent 5,182,663).

Claims 50-52 have been cancelled herein.

Rejection under 35 U.S.C. § 102/103

The Examiner rejected Claims 3 and 4 under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Nilsen *et al.*

Claims 3 and 4 depend directly and indirectly, respectively, from independent Claim 1 and thus include the patentable distinction over Nilsen *et al.* as set forth above. That is, Nilsen *et al.* fail to teach or suggest open-faced cube-corner prisms as recited in Claim 1.

Accordingly, this rejection is respectfully traversed.

Rejection under 35 U.S.C. § 103

The Examiner rejected Claims 1-5, 11, 12, 14, 15, 18, 22-27, 30-33, 44, 45, and 47 under 35 U.S.C. § 103(a) as being unpatentable over Stump *et al.* (U.S. Patent 5,835,271) in view of Nilsen *et al.*

Each of the independent claims, namely Claims 1, 25, 32, and 44, recites open-faced prisms or surfaces which are not taught or suggested by Stump *et al.* and Nilsen *et al.*, taken individually or in combination. The multi-sided retroreflector 20 of Stump *et al.* includes a first layer of transparent microspheres 22 and a second layer of transparent microspheres 24 (see Figure 2). A reflecting layer 40 is provided on the rear surface of the microspheres 22, 24. As with traditional cube-corner prisms, the light rays must pass through the material that forms the microspheres. Thus, Stump *et al.* fail to teach or suggest open-faced cube-corners.

Accordingly, the rejection is respectfully traversed.

The Examiner rejected Claims 6 and 49 under 35 U.S.C. § 103(a) as being unpatentable over Stump *et al.* in view of Nilsen *et al.* as applied to Claims 1-5, 11, 12, 14, 15, 18, 22-27, 30-33, 44, 45, and 47 above, and further in view of Coderre (U.S. Patent 5,272,562). Claims 6 and

49 each depend directly from independent Claim 1 and thus include the limitation of first and second open-faced cube-corner surfaces.

Coderre is directed to a retroreflective article having traditional cube-corner elements wherein light passes through the elements and is retroreflected at the cube-corner surfaces. It is respectfully submitted that Coderre does not teach or suggest open-faced cube-corner surfaces and thus the references cited by the Examiner taken individually, or in combination, fail to teach or suggest all the limitations of independent Claim 1.

The Examiner rejected Claims 13 and 46 under 35 U.S.C. § 103(a) as being unpatentable over Stump *et al.* in view of Nilsen *et al.* as applied to Claims 1-5, 11, 12, 14, 15, 18, 22-27, 30-33, 44, 45, and 47, and further in view of Heenan (U.S. Patent 4,208,090). Claim 13 depends directly from Claim 1, which recites first and second open-faced cube-corner surfaces, and Claim 46 depends directly from independent Claim 44, which recites open-faced cube-corner surfaces.

As shown, for example, in Figure 7 of Heenan, the reflector elements 220 are analogous to traditional air-backed retroreflective prism elements since light rays must pass through the material that forms the reflector elements 220. It is respectfully submitted that Heenan fails to teach or suggest open-faced cube-corner surfaces and thus the cited references, taken alone or in combination, do not teach all the limitations of Claims 13 and 46.

Accordingly, the rejection is respectfully traversed.


CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If

the Examiner believes that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 
Erik L. Ence
Registration No. 42,511
Telephone: (978) 341-0036
Facsimile: (978) 341-0136

Concord, Massachusetts 01742-9133

Dated: February 14, 2003